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Mortality amongst Lives selected at the Ages 75 to 81, for Government Annuities.

WE have already stated that we are indebted for a preceding paper in this number of our *Magazine*, to the kindness of Mr. W. T. Thomson, the eminent actuary of Edinburgh; and we have now, in addition, to draw the attention of our readers to a few facts with which he has obligingly furnished us, respecting the selection of lives for Government Annuities at an advanced age, which forms an interesting subject of inquiry. Although few in number, yet from the care with which the observations have been made, and the authenticity of the data, they are well worthy of attention. To afford greater facility of reference, we have classified them into the following Table:—

Table showing, out of 83 Lives, selected at the Ages 75 to 81, the Deaths in different years, and the number of Survivors.

Selected at Age..		75.		76.		77.		78.		79.		80.		81.		TOTAL.	
YEARS.		Living.	Died.	Living.	Died.	Living.	Died.	Living.	Died.	Living.	Died.	Living.	Died.	Living.	Died.	Living.	Died.
1834		3	..	5	1	9	1	16	2	23	6	24	4	3	..	83	14
1835		3	..	4	..	8	..	14	1	17	1	20	1	3	..	69	3
1836		3	1	4	..	8	2	13	1	16	2	19	2	3	..	66	8
1837		2	..	4	..	6	..	12	1	14	..	17	1	3	..	58	2
1838		2	..	4	..	6	1	11	1	14	2	16	3	3	..	56	7
1839		2	..	4	..	5	3	10	1	12	1	13	1	3	..	49	6
1840		2	1	4	..	2	..	9	1	11	..	12	1	3	1	43	4
1841		1	1	4	1	2	..	8	1	11	3	11	1	2	..	39	7
1842		..	..	3	..	2	1	7	..	8	1	10	3	2	2	32	7
1843		..	..	3	..	1	..	7	1	7	2	7	2	..	..	25	5
1844		..	..	3	..	1	..	6	3	5	1	5	1	..	..	20	5
1845		..	..	3	..	1	..	3	..	4	2	4	2	..	..	15	4
1846		..	..	3	1	1	1	3	2	2	..	2	1	..	..	11	5
1847		..	..	2	1	..	..	1	..	2	1	1	1	..	..	6	3
1848		..	..	1	..	..	..	1	..	1	..	..	..	..	..	3	1
Surviving to	1849	..	..	1	..	..	..	..	..	1	..	..	..	..	..	2	
		18	3	51	4	52	9	121	16	147	22	161	24	25	3	575	81

The individuals chosen were all males, selected about the end of the year 1833, and the beginning of 1834, for four different investments.

1. 3rd July, 1833, 20 lives.
2. 9th Oct., 1833, 20 lives.
3. 3rd Jan., 1834, 20 lives.
4. 31st March, 1834, 35 lives.

95 lives.

Some of the lives were selected twice, which will account for the difference from the number given in the Table. Out of the number chosen previous to the 1st of January, 1834, one death occurred in the year 1833; but it is considered sufficiently near for any practical purpose to exclude the lives and the mortality for that year; and to assume that all the lives were

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brought under observation from the 1st of January, 1834, at the ages given at the head of the Table. From the data there recorded, all of the same age at the beginning of each year have been brought together, and the probability of surviving a year at each age ascertained. Thus, the three who were selected at 81 are classed with the 20 surviving at that age, out of the 24 who had been selected at age 80, and with the 16 surviving to age 81, out of the 23 who entered at age 79, &c. The observations would otherwise not have been sufficient to form a Table of Mortality. A small Table, showing the number surviving at each succeeding age, out of 1,000 existing at age 76, will be found below; and the expectation thence deduced, compared with the expectation according to Mr. Finlaison's Table of Government Male Annuitants, and that obtained from the experience of 17 Life Assurance Companies, as published with the series of Tables computed by Mr. Jenkin Jones in 1843.

Age.	Log. of the Probability of living a year.	Surviving at each age.	Expectation.	Ditto, Government Males.	Ditto, Experience of Offices.
76	1·94201	1000	6·88	6·69	6·11
77	·94201	875	6·79	6·23	5·76
78	·97004	766	6·68	5·78	5·42
79	·91568	715	6·12	5·35	5·09
80	·95861	588	6·34	4·94	4·78
81	·95653	535	5·92	4·55	4·48
82	·94310	484	5·49	4·18	4·18
83	·95424	425	5·18	3·82	3·90
84	·94885	382	4·70	3·46	3·63
85	·96614	340	4·22	3·12	3·36
86	·95031	314	3·53	2·81	3·10
87	·94389	280	2·90	2·53	2·84
88	·83863	246	2·23	2·31	2·59
89	·81291	170	2·01	2·12	2·35
90	·78915	110	1·83	1·95	2·11
91	·85387	68	1·65	1·83	1·89
92	·60206	49	1·09	1·65	1·67
93	·69897	19	1·03	1·49	1·47
94	....	10	·50	1·34	1·28

It may be remarked, that from the facts not being very numerous, we have thought it unnecessary to give a greater show of regularity to the probabilities of living by adopting any mode of arbitrary correction, and in the first three or four ages the numbers originally selected were very small. Allowance must be made for this, in comparing the expectation with the other two Tables. To facilitate the inquiries of those, however, who may feel disposed to form a more perfect Table, we have added the logarithm of the probability of living a year at each age. The average duration of life, according to the facts now recorded, will be noticed, at every age up to 87, to exceed considerably either that according to the Government Table, or that derived from the experience of Life Assurance Companies; and proves that a very profitable investment must have been the result of the selection. In the case of 57 out of 81 deaths, the months are recorded in which the parties died, and it may be useful to compare, as in the fol-

lowing Table, what period of the year is most fatal at that advanced period of life.

Out of 57 Deaths, there occurred in different Months—							
January	2	April	4	July	4	October . .	10
February . .	6	May	4	August . .	3	November	6
March	5	June	5	September	5	December	3
Proportion } per cent. }	22·81	.. ..	22·81	.. ..	21·05	.. ..	33·33

On the Fires in London during the 17 years from 1833 to 1849 inclusive, showing the numbers which occurred in different Trades, and the principal Causes by which they were occasioned. By SAMUEL BROWN, Esq., Fellow of the Institute of Actuaries.

UNTIL within a very recent period the doctrines of probability have been applied to scarcely any great public purpose except the assurance of human life. In that particular department of knowledge, a number of labourers have been for many years busily occupied in gathering the facts, endeavouring to classify events, and trace some general laws. In later years, researches have been extended into the effects of different classes of diseases upon health and longevity. Still more recently, the calculations of fidelity risks, of railway and other accidents, of bankruptcy and of other circumstances affecting the person of an individual, or his commercial dealings, have been made with a view of proving their capability of being estimated for insurance.

It is remarkable that, in the midst of all these inquiries, the classes of insurance for which England first became famous, and which, in fact, by their early success, led to the still more extraordinary progress which has distinguished the system of Life Assurance, viz., Fire and Marine Risks, have been almost wholly neglected as matters of statistical research. It is not by this remark intended to convey an impression, that the system on which the Fire Insurance Offices are conducted is in the least degree deficient in that experience on which such important affairs must mainly depend; or that the skill of the managers is inferior to that which is required in the business of Life Assurance. On the contrary, the remarkable success, and the stability of those great Companies, and the enormous amount of property which has been secured from risk by their means in this kingdom—to say nothing of the foreign assurances, which their honourable dealing, and their guarantee of accumulated wealth, have attracted—are the best proofs of the sagacity and experience of those who have so creditably managed their transactions. But whilst the facts connected with the Assurance of Life have been recorded and published, and whilst they have thus led the way to many new and important applications of the doctrine